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INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

REC'D 14 DEC 2004

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Applicant's or agent's file reference P045208PCT		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/NL 03/00605	International filing date (day/month/year) 29.08.2003	Priority date (day/month/year) 30.08.2002	
International Patent Classification (IPC) or both national classification and IPC H01M8/04			
Applicant STICHTING ENERGIEONDERZOEK CENTRUM NEDERLAND			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the opinion II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application 			
Date of submission of the demand 29.03.2004		Date of completion of this report 14.12.2004	
Name and mailing address of the International preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Reich, C Telephone No. +31 70 340-4396	



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/NL 03/00605**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-6 as originally filed

Claims, Numbers

1-19 as originally filed

Drawings, Sheets

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-19
	No: Claims	
Inventive step (IS)	Yes: Claims	1-19
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-19
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
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Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1) Reference is made to the following document:

D1: EP-A-1 033 769

Document D1 has been cited by the applicant in the description.

2) NOVELTY:

The document D1 (claims 1,3,6,8,9; paragraphs 16,22; column 10, line 42-44) discloses:

A device and a method for the purification of hydrogen in a hydrogen generating arrangement in which carbon monoxide is converted on one side of the membrane in the presence of water to carbon dioxide and water on said one side of the membrane, hydrogen passing through that membrane to the other side of said membrane and being fed to the anode inlet of the fuel cell.

The subject-matter of claims 1 and 10 differs from this known membrane reactor in that the membrane reactor is not used in a hydrogen purification unit upstream of the fuel cell but in the treatment of exhaust gases downstream of the fuel cell. The subject-matter of claims 1 and 10 differs in particular from the prior art in that the hydrogen is combusted after passing through the hydrogen permeable membrane. The product of the permeate side of the membrane reactor is an aqueous stream and not hydrogen as in the prior art.

The subject-matter of claims 1 and 10 is therefore new (Article 33(2) PCT).

3) INVENTIVE STEP:

The document D1 is regarded as being the closest prior art to the subject-matter of claims 1 and 10.

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The problem to be solved by the present invention may be regarded as the provision of an alternative device for the production of a concentrated stream of carbon dioxide gas by application of the water gas shift reaction.

The solution to this problem proposed in claims 1 and 10 of the present application is neither known from, nor rendered obvious by, the available prior art. Claims 1 and 10 are therefore considered as involving an inventive step (Article 33(3) PCT).

4) Claims 2-9 and 11-19 are dependent on claims 1 and 10 and as such also meet the requirements of the PCT with respect to novelty and inventive step.